S2D Performance with iWARP RDMA

Chelsio T520-CR vs. Mellanox ConnectX-4

This benchmark report compares the performance results using the two RDMA networking choices for Windows Server 2016 Storage Spaces Direct (S2D): TCP-based iWARP and UDP-based RoCEv2. The results show Chelsio iWARP RDMA adapter outperforming RoCE based Mellanox adapter with a higher IOPS and lower latency numbers. This proves that Chelsio iWARP RDMA is a much superior choice, when it comes to providing a high-performance, low-cost and scalable S2D deployment using standard Ethernet infrastructure.

Test Results

The following table presents IOPS and latency performance results for the two adapters using the **DiskSpd** tool with 8K I/O size and 90% READ. With an aggregate IOPS of more than 381K as compared to Mellanox's 350K and lower latency, Chelsio's performance is far more superior than the competition.

	IOPS (K)	READ min. Latency (ms)	WRITE min. Latency(ms)
Chelsio	381~	2.0	3.1
Mellanox	350~	3	5

Table 1 – IOPS, READ/WRITE latency performance

Test Configuration

The test setup consists of 4 servers using 2 ports connected to 2 10GbE switches. Each server is configured with 2 Intel Xeon E5-2680 v3 processors running at 2.4GHz and 256GB of RAM. Each server is setup with 4 800GB SSD devices and 10 4TB SATA HDDs. Windows Server 2016 RTM operating system is installed on each server. The Chelsio setup uses 1 T520-CR Unified Wire adapter with Chelsio Unified Wire Installer v5.0.0.79, whereas the Mellanox setup uses ConnectX-4 adapter with latest driver, in each server.

Conclusion

This paper compared S2D performance results of Chelsio's T520-CR adapter and Mellanox ConnectX-4 adapter in Windows. The results demonstrate that Chelsio has a higher IOPS performance with lower latency compared to Mellanox. In addition, Chelsio iWARP RDMA solution does not require the complexity of configuring Data Center Bridging (DCB) protocols either on network adapters or on network switches. This ability to work with any legacy switches makes Chelsio iWARP RDMA, the ideal solution for enterprises looking for a superior-performance and cost-effective S2D deployments.

Related Links

iWARP RDMA – Best Fit for Storage Spaces Direct
High Performance S2D with Chelsio 100GbE
Lenovo S2D Deployment Guide
Dell S2D Deployment Guide